



*A NIOSH Education and Research Center for
Occupational & Environmental Health & Safety*

Mountain and Plains Education and Research Center

Summary Annual Report

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Program Overview

The Mountain and Plains Education and Research Center (MAP ERC) is a joint effort of the University of Colorado (UC), Colorado State University (CSU), National Jewish Health, Denver Health and Hospital Authority, and the University of New Mexico Health Sciences Center. Housed in the Colorado School of Public Health (CSPH), the MAP ERC fills an important regional need in the West (Colorado, New Mexico, Arizona, Wyoming, Montana, North Dakota and South Dakota) both by engaging in new occupational health and safety initiatives and by collaborating with neighboring Education and Research Centers. Our mission is to improve occupational and environmental health and safety through education, research, and community partnerships. We help address the critical need for well-trained occupational and environmental health professionals in our region by offering graduate level and post-graduate training and continuing professional education. Visit us online at: <http://maperc.ucdenver.edu/>.

With 48 core faculty members, the Center provides training in Occupational and Environmental Medicine, Industrial Hygiene, Ergonomics, Occupational Health Psychology, and Health Physics. In 2011-2012, 20 trainees received full or partial support from the MAP ERC. During the period 7/1/2011-6/30/2012, 10 trainees graduated from our programs and joined the regional and national workforce of occupational health and safety professionals.

Center wide activities include our Pilot/Small Projects Research Program, a Diversity Recruitment Program that is integrated with our Outreach Program, Interdisciplinary Integration, and a Continuing Education Program.

TRAINING PROGRAMS

Academic Program	Core Faculty	Adjunct/ Supporting Faculty	Total Trainees	NIOSH Funded Trainees	Graduates 2011-2012
Industrial Hygiene	13	22	20	10	5
Occupational/Environmental Medicine	23	26	1	1	0
Health Physics	6	-	18	2	5
Occupational Health Psychology	3	5	3	3	0
Ergonomics	3	7	7	4	0
Total	48	60	49	20	10

Occupational and Environmental Medicine Residency

(Karen Mulloy, DO, MPH, Director; Roxana Witter, MD, MSPH, Co-Director)

Twenty-three Core faculty and 26 supporting faculty members contributed to clinical and research training of 1 resident, who began her training in March, 2012 (and 2 additional residents beginning their training July 1, and August 1, 2012). A joint endeavor of UC, National Jewish Health, and Denver Health, the program provides ACGME accredited training that includes an MPH degree. We continue to facilitate interactions between OEM residents and trainees from the four partner training programs on the CSU campus with a well-received Occupational Environmental Health Interdisciplinary Seminar. Interdisciplinary trainee teams work together with community partners to advance the mission of occupational and environmental health. The residency director and program faculty continue to update the residency to meet new ACGME resident evaluation and documentation

requirements.

Industrial Hygiene Training Program

(Stephen Reynolds, PhD, CIH, Director; William Brazile, PhD, CIH, Co-Director)

Thirteen Core Faculty and 22 supporting faculty members contributed to the professional and research training in Industrial Hygiene. Kirsten Koehler joined the faculty as a new Assistant Professor bringing experience in aerosols science and exposure assessment strategies. This CSU-based program in the Department of Environmental and Radiological Health Sciences provides ABET-accredited training at the masters and doctoral level. Achievements this past year included further progress in promoting increasing interaction between industrial hygiene students and the other trainees on the CSU and UCD campus, especially through the Occupational and Environmental Health Interdisciplinary Symposium. IH trainees continue to be nationally recognized for the quality of their interdisciplinary research. During this grant period, 16 manuscripts including a student author (current or former) were published/in press and more were submitted (includes Ergonomics and OHP students). More than 20 national and international presentations involving students were made. Three students won prestigious national AIHA awards. Five won the national Erma Byrd Scholarship; and one was awarded an EPA STAR Fellowship.

Ergonomics Training Program

(John Rosecrance, PhD, PT, CPE, Director; David Gilkey PhD, DC, CPE, Associate Director)

Masters of Science and doctoral degrees are offered by three core and seven supporting faculty members. This interdisciplinary program is structured to provide competency towards certification as a Certified Professional Ergonomist. The first step in this process is designation as an Associate Ergonomics Professional, which was obtained by two of the students. Student research areas included measures of safety culture in the construction industry, ergonomic exposure assessment in food manufacturing, and the prevention of injuries in agricultural work. Students presented research results at national and international meetings and submitted several manuscripts to scientific journals. In 2012, Dr. Rosecrance and two ERC students presented research papers and collaborated on research with faculty and graduate students at the University of Sassari in Italy. The Ergonomics Training Program hosted a conference on exposure assessment that involved students and faculty from the Heartland, Deep South, and Rocky Mountain ERCs.

Occupational Health Psychology Training Program

(Lorann Stallones, MPH, PhD, Director; Kimberley Henry, PhD Core Faculty; John Rosecrance, PhD, PT, CPE, Core Faculty)

The OHP training program is one of only two supported by the NIOSH ERC program nationally. It provides education using an interdisciplinary model with course work in psychology, ergonomics, industrial hygiene and epidemiology. Based at CSU, three core faculty and five supporting faculty provide masters and doctoral training. Trainees have presented at national and international conferences, participated in the MAP ERC interdisciplinary course, visited work sites with other MAP ERC trainees, and coordinated a monthly seminar inviting local, and national experts to address OHP topics and continue to publish their work in peer reviewed journals. OHP trainees are involved with projects on leadership behaviors and employee safety, improving safety among blue collar

organizations, leadership safety training among construction workers, health promotion and wellness programs in worksites, ergonomic evaluation of computer workstations in a worksite, safety training among Latino workers in industrialized dairy operations, network analysis of suicide prevention networks, and risky sexual behaviors among Nepal female sex workers. One OHP trainee completed her masters' degree and received an international award to visit Australia to present research and establish collaborative relationships with researchers from other countries and diverse disciplines. Another received a 2011-2012 Erma Byrd Scholarship. Two core required OHP courses were offered, Prevention of Occupational Illnesses and Injuries (Fall, 2011; 8 students including OHP, industrial hygiene, ergonomics, and public health) and Occupational Health Psychology (Spring, 2012; 6 students including OHP, industrial hygiene and ergonomics).

Health Physics Training Program

(Thomas Johnson, PhD, Director)

A critical shortage in the supply of qualified radiation safety professionals continues to exist in the field of health physics, especially in our region. The Health Physics training program at CSU has been able to attract top students for the graduate program because of MAP ERC support. Last year, the six core faculty members in this ABET-accredited program trained both Masters of Science and doctoral students. Trainees have presented at national and international conferences. Marilyn Magenis (a MAP ERC Trainee) was awarded best presentation at the Health Physics Society Annual Meeting in Sacramento CA in July 2012. This program continued to lead many of the MAP ERC interdisciplinary site visits, including visits to a uranium mill, a power plant, Los Alamos National Laboratory, and others.

CONTINUING EDUCATION

(David Gilkey, PhD, DC, CPE Director; Lili Tenney, MPH, Associate Director)

In 2011-2012, we trained 1,508 individuals through 22 CE courses offered live or online, for a total of 2,079 person days of training. The CE program offerings draw from more than 300 occupational and environmental health and safety related topics presented by core and supporting faculty, plus seminars presented by visiting professors. In 2012, we launched a new online needs assessment survey with both the RMCOEH and the Midwest Center for Occupational Health and Safety (MCOHS) in Minnesota, in order to position ourselves to meet training needs for the next year of this award. Our offerings have expanded on addressing needs identified by the CE/Outreach Advisory Board and regional assessments, including: establishing a robust, state-of-the-art, online learning system maperc.mycrowdwisdom.com/diweb/start to further our goal of serving as the regional clearinghouse for OHS education. To date, our web-based service hosts 36 online courses. Of particular note, this included the development and launch of "CIH Online" CIHonline.org- the first-ever fully web-based, 24/7 accessible, Industrial Hygiene Certification Exam Review course - where trainees access 40 hours of creative, in-depth lectures that prepare them for the exam, or that serve as refresher modules for those in the field. Additionally, through an innovative collaboration with the State of Colorado Department of Labor, private businesses, and other stakeholders, a 2-hour online CME course and toolkit was launched to instruct physicians on best practice guidelines for management of chronic, non-cancer pain and address the epidemic of prescription opioid abuse. The CE team hosted the 2nd annual MAP ERC Energy Summit concerning worker health and safety in the oil and gas development industries and provided continuing support to the Association for Occupational Health Professionals in Healthcare National Conference, held in October 2011. The CE program has been able to expand its educational offerings and technology development this year due to continued philanthropic support received from Pinnacol Assurance, the major workers' compensation insurance provider in Colorado.

CENTER WIDE ACTIVITIES

Lee Newman, MD, MA, Center Director; Stephen Reynolds, PhD, CIH, Deputy Director; Kenneth Scott, MPH Outreach Director, William Brazile PhD, CIH and Dominic Martinez, Diversity Program Co-Directors, John Reif, PhD and John Adgate, PhD, Pilot/Small Projects Research Program Directors

Administrative Core Built to Promote Interdisciplinary Coordination

A successful ERC is more than the sum of its training programs. Our 2011-12 highlights included enhancement of our social media channels to reach a greater, more diverse audience of occupational health and safety professionals, including: a new website (www.maperc.ucdenver.edu); increased subscriptions (>500) to our weekly e-newsletter, "RoadMAP"; 17,459 "post views" to our Facebook page (www.facebook.com/MAPERC), active Twitter followers (@map_erc); and student environmental and occupational safety and health videos on our YouTube Channel (www.youtube.com/cspfMAPERC).

We refined the Center's goals, objectives, and evaluation metrics using Logic Models for each component of the Center Wide Activities and expanded our program evaluation activities. We helped create an additional 3 credit hours of integrated curricular offerings at UCD and CSU. We facilitated work site visits and developed R2P projects for MAP ERC students to participate on as part of our "Occupational and Environmental Health Interdisciplinary Symposium" course.

Diversity Program

The Public Health Academy: The CSPH, UC Office of Diversity and Inclusion, and MAP ERC held the second annual "Public Health Academy". The initial public health academy had a significant impact, garnering national recognition on a prominent public health blog (<http://scienceblogs.com/thepumphandle/2012/02/20/when-i-grow-up-i-wanna-be-a-pu/>). After a successful inaugural year in 2010-2011, the MAP ERC helped the second annual Public Health Academy expand in length (three weeks as opposed to two), size (30 as opposed to 12) and scope (undergraduates attended, as well as high school students). The goal of the Academy is to introduce high school students to public health principles and public health careers. Two days were devoted to OHS careers, including visits to a local farm and a mine. Our staff and faculty continue in a mentoring role for students from this program. The local Colorado Chapter of the American Society for Safety Engineers participated in the event, as did the Rocky Mountain Section of the American Industrial Hygiene Association and the Central Rocky Mountain Chapter of the Health Physics Society.

Workshop on Research Translation with Vulnerable Workers: The United States' workforce is becoming increasingly diverse, particularly in terms of race, culture, ethnicity, gender, sexual orientation, socio-economic status, age, and physical abilities. Workplace demographic changes have been accompanied by significant disparities in occupational safety and health among some working populations. A commonality across all these vulnerable groups is the difficulty public health professionals experience when developing effective and appropriate occupational safety and health interventions. Some of the barriers to effectively reaching these vulnerable groups include: differences in language and culture, documentation status, part time and/or contingent worker status, and employment in small businesses. Recognizing a need to address these issues regionally and nationally, the MAP ERC (OHP, CE & Outreach) co-sponsored the *Workshop on Research and Translation among Vulnerable Workers* on June 6-8, 2012. The purpose of this workshop was to bring together 13 leading academics & researchers specialized in research translation and/or vulnerable worker population to provide hand-on workshops with the focus on occupational safety and health. Speakers focused on occupational safety and health among immigrant populations, older workers, construction workers, young workers, home health care workers and informal sector workers. A total of 68 researchers and 14 graduate students from 20 states and four countries attended the workshop. The attendees included professionals

representing universities, industries, government and non-governmental organizations.

Outreach Program

Supporting Local Occupational Health and Safety Professionals: The relationship with our professional partners complements our efforts in Continuing Education. For example, ASSE, AIHA and CRMCHPS representatives were able to promote their professions and organizations to our Public Health Academy students. The MAP ERC Outreach Director is currently in conversation with the ASSE Colorado Chapter President and the ASSE Region 2 Vice President about other roles for the ERC, including the establishment of a student chapter in Region 2 in order to enhance visibility of the organization among younger professionals.

Designing the Age Friendly Healthcare Workplace: Through an ongoing partnership with NIOSH and the University of Washington ERC, the workshop titled "Designing the Age Friendly Healthcare Workplace" was pilot tested in Baltimore, Maryland in collaboration with the University of Maryland and the Johns Hopkins ERC's Continuing Education program. Twenty participants, primarily from the Veterans Administration, attended a day-long workshop and set goals for themselves to begin taking action to prepare. Another pilot workshop will be held soon in Denver.

Surveillance: The MAP ERC continued to support occupational health surveillance throughout the region by contributing to Occupational Health Indicator Reports for Wyoming, Montana, North Dakota and South Dakota. The Dakota reports were produced in collaboration with the Midwest Center for Occupational Health and Safety (MN). Findings from the North Dakota report were presented in collaboration with MCOHS at an injury prevention conference in Bismarck. The MAP ERC is building a relationship with the new State Occupational Epidemiologist in Wyoming, Mack Sewell.

Total Worker Health: The MAP ERC takes a comprehensive view of worker health and safety. We started collaborating with Pinnacol Assurance, Colorado's major workers' compensation carrier, on workplace health promotion for small and mid-size businesses. This initiative includes working with regional stakeholders, providers of health promotion services, and conduct of research examining the impact of health risk management on worker health, workers' compensation claims, and costs. The MAP ERC also developed a new academic course at the Colorado School of Public Health on Worksite Wellness, Safety and Health Promotion.

PILOT/SMALL PROJECTS RESEARCH PROGRAM

This program is designed to help promote NORA agenda projects in the region, based in both academic and community-based organizations. In 2011-12, we funded 5 of 11 applications for pilot/small projects research. The new topics included: Hazardous Material Handling and Occupational Exposures in Veterinary Workers; 3D Visualization for Safety Training of Hispanics in Construction; A Lifecycle Safety Risk Analysis of Green Roofing Systems; Cost-Effective Monitoring of Commuter's Exposure to Volatile Organic Compounds; and Weight Loss Intervention in Long-Haul Drivers: A Pilot Study. In our first five years, 30 award recipients published over 20 peer-reviewed papers in OSH or allied field journals and leveraged their preliminary data to obtain federally funded career development awards and help establish their careers. The projects have focused on six NORA sectors: Agriculture, Construction, Healthcare and Social Assistance, Manufacturing, Public Safety, Services, and Transportation, with an emphasis on research-to-practice (R2P).